ICESat-2 Atmospheric Applications & Forging multi-mission solutions

Atmospheric Applications Focus Session – Prospectus and Draft Agenda

Target Dates: 16 November 2022
Format: Virtual, Registration Link:
https://nasaenterprise.webex.com/nasaenterprise/j.php?RGID=r036f48e8fc10c65957c0722e8f0fe28b

The Ice, Cloud and land Elevation Satellite-2 (ICESat-2) mission Applications Team will host a focus session to identify current and potential enabled applications of its atmospheric data products and to create a collaborative space to foster multi-mission solutions to pressing community challenges. This session will bring together representatives from various applications communities, as well as science leaders from available ongoing satellite missions, including ICESat-2, CALIPSO (the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations), and ADM-AEOLUS (Atmospheric Dynamics Mission). The focus session will aim to foster a mutual understanding of the capabilities of ICESat-2, clarify expectations for its use, help identify how the mission data can be combined with data from available lidar atmospheric sensors, as well as foster collaboration for future data integration.

The focus session will examine the pros and cons of using available atmospheric data sets and how they can be used together to address community needs for applications in various thematic areas. Our goal is to make explicit user community assumptions about the available atmospheric data products that may be leading to unused data. We will also share examples of how individuals and institutions are and could potentially use ICESat-2 data in different applications to help inspire innovative ideas to integrate atmospheric data. We will conclude the meeting with an awareness and training session on the ICESat-2 Quicklook products and on the Icepyx community and software library.

This focus session is being organized as a follow-up discussion to the Joint ICESat-2 Atmospheric Tutorial with CALIPSO, EARTHCARE, ADM-AEOLUS and CATS. The tutorial hosted pre-launch of ICESat-2 on May 31-June 1, 2017, allowed us to obtain science and operational community ideas on how to best use the ICESat-2 atmospheric data, as well as thoughts on how to tackle some of its unique challenges.

AGENDA Virtual, Wednesday, November 16, 10:00 am – 4:45 pm

Wednesday, November 16		**Expectations**
10:00 am	**Logistics and Goals -** Why are we organizing this event?	Review goals and desired outcomes for the session
10:15 am	**Welcome Remarks** NASA Atmospheric Research and Strategic Opportunities ***Laura Judd, NASA HQ*** ICESat-2 Applications Program Outlook ***Woody Turner | Thomas Neumann, NASA GSFC***	Leadership welcome • ICESat-2—Four Years after launch • Where is the atmospheric community now? Strategic opportunities moving forward. • NASA Health & Air Quality Program
10:35 am	Questions and Answers	
10:45 am	What are the ICESat-2 atmospheric data products? ***Steve Palm, NASA Goddard Space Flight Center (GSFC)***	• Review atmospheric data attributes, resolution, time step, accuracy and latency. • How can ICESat-2 data be used for e.g., air quality, assessments for forecasts, tracking plumes for aviation?
11:10 pm	Break (30 minutes)	
11:40 pm	**Plenary Talks (20 minutes each + 5 minutes for questions)**	
11:40 pm *12:05 pm* *12:30 pm*	• What does ICESat-2 provide and what are known applications of the data? ***Ute Herzfeld, University of Colorado Boulder*** • Overview of CALIPSO applications 2006 – present. ***Jason Tackett– NASA Langley Research Center (LaRC)*** • Aeolus: From improving the weather forecast and climate models to tracking atmospheric particles, including outlook of next DWL/HSRL missions. ***Jonas von Bismark, European Space Agency***	• Identify what ICESat-2 provides that other sensors don't. • What are the difficult-to-detect atmospheric layers and aerosols in ICESat-2 and CALIPSO data? • What are the known practical applications of the atmospheric data products?

12:55 pm	**Open Discussion:** • Can we think of multi-satellite solutions to fill key data gaps and serve key applications? • Where can ICESat-2 be used wholly or partly instead of CALIPSO, ADM-Aeolus, and EarthCARE?	
1:30 pm	Break (15 minutes)	
1:45 pm *1:45 pm* *2:00 pm* *2:15 pm* *2:30 pm*	**Innovative solutions and Opportunities to using ICESat-2 data in applications** (12 minutes each + 3 minutes for questions) • Cloud and Aerosol Measurement Priorities at NRL. **TBD** • Use of Satellite Data to reduce the impact of weather in the National Airspace System. **Randy Bass (TBC), Federal Aviation Administration** • The relationship between Arctic sea ice leads and cloudiness in cold months. **Zheng Liu, Applied Physics Laboratory, University of Washington** • Smoke aerosols and Cloud Estimates in South America. ***Renato Ramos da Silva, Federal University of Santa Catarina***	• Highlight ways individuals and institutions are or could potentially use ICESat-2 data in different applications. • Identify solutions to challenges faced by applied users in integrating the data in their decision processes.
2:45 pm	**Discussion:** What are key community needs for using atmospheric data? How practically can we address the needs of the community?	
3:15 pm	Break (15 minutes)	
3:30 pm *3:30 pm* *4:00 pm*	**Training and Awareness Raising (30 minutes each)** • ICESat-2 atmosphere quick look and gridded products. ***Steve Palm, NASA Goddard Space Flight Center (GSFC)*** • Icepyx – Software library and community for developing shared library of resources. ***Jessica Scheick, Research Assistant Professor at the University of New Hampshire, Earth Systems Research Center***	• Review ICESat-2 atmospheric quick look products and how to access/use them. • Introduce icepyx community and software library. Provide demonstration. • Invite feedback from community on tools need for the atmospheric data. • Gridded L3B data products.
4:30 pm	**Day 1 Wrap-up**	
4:45 pm	**End of Meeting**	